CLAIMS

We claim:

1. A large subsonic aircraft having a plane of symmetry and a transverse axis, said transverse axis being perpendicular to said plane of symmetry, said plane of symmetry including a longitudinal and a vertical axis, said longitudinal axis being perpendicular to said vertical axis, said longitudinal axis coinciding with the direction of airflow, said large subsonic aircraft comprising:

    a) a main body extending along said transverse axis, said main body being composed of a central section, two symmetrical transition sections and two symmetrical external wings, the main body central section, the transition sections, and the external wings being blended into a unique airlifting body with smooth aerodynamic surfaces, said main body having an upper and an under surface, a leading and a trailing edge, the main body cross sections having airfoil shapes in airflow direction, the main body airfoils having chords that extend between the main body leading and trailing edge, said main body leading edge having a sweepback, said main body trailing edge in the area of said main body external wings having a sweepback, the trailing edge sweepback angle on the external wings inboard ends being zero, the leading edge sweepback angles, the trailing edge sweepback angles, the external wings span, and the length of the main body chords on the external wings outboard ends being adjusted to generate low induced drag and simultaneously provide for a sufficient contribution of said main body external wings in sustaining longitudinal stability of said large subsonic aircraft, said main body trailing edge is arching substantially in aft direction from said external wings inboard ends to said plane of symmetry, thus a trailing edge sweepforward is being formed, the trailing edge sweepforward maximum angle exceeding 40 degrees in the area of said main body transition sections, hence resulting in very long said main body chords in the area of said main body central section, thereby providing for formation of inner space for a bulky payload

accommodation by using thin main body airfoils, whereby said main body with smooth aerodynamic surfaces, thin airfoils, large airlifting surface area, and low induced drag generation providing for a high lift capacity and high aerodynamic efficiency of said large subsonic aircraft at high subsonic speed,

b) a central jet engine pylon with at least one jet engine being situated therein, said jet engine pylon being disposed on the rear portion of said main body over the main body upper surface so that said plane of symmetry is simultaneously the central jet engine pylon symmetry plane, the central jet engine pylon airframe being directly integrated with the main body airframe, the front portion of said central jet engine pylon having an aerodynamically shaped lip, the central jet engine pylon lip with said main body upper surface constitute a central jet engine air inlet, thus significantly reducing the thickness of boundary layer over said main body upper surface in front of said central jet engine air inlet, whereby additionally increasing aerodynamic efficiency of said large subsonic aircraft,

c) a fin with rudder being joined said central jet engine pylon on the top thereof so that said plane of symmetry being simultaneously the fin symmetry plane, said fin with rudder being at a great distance from the gravity center of said large subsonic aircraft, whereby significantly increasing yaw control and directional stability of said large subsonic aircraft,

d) a tailplane with elevators extending along said transverse axis on both sides of said plane of symmetry, said tailplane with elevators being joined said fin, the tailplane vertical position being adjusted to avoid turbulent airflow aft of said main body, the longitudinal position and surface area of said tailplane with elevators being adjusted to provide for sufficient pitch maneuver and longitudinal stability of said large subsonic aircraft that meet stability requirements for a civil aircraft.

2. A large subsonic aircraft having a plane of symmetry and a transverse axis, said transverse axis being perpendicular to said plane of symmetry, said plane of symmetry including a longitudinal and a vertical axis, said longitudinal axis being perpendicular to said vertical axis, said longitudinal axis coinciding with the direction of airflow, said large subsonic aircraft comprising:

    a) a main body extending along said transverse axis, said main body being composed of a central section, two symmetrical transition sections and two symmetrical external wings, the main body central section, the transition sections, and the external wings being blended into a unique airlifting body with smooth aerodynamic surfaces, said main body having an upper and an under surface, a leading and a trailing edge, the main body cross sections having airfoil shapes in airflow direction, the main body airfoils having chords that extend between the main body leading and trailing edge, said main body leading edge having a sweepback, said main body trailing edge in the area of said main body external wings having a sweepback, the trailing edge sweepback angle on the external wings inboard ends being zero, the leading edge sweepback angles, the trailing edge sweepback angles, the external wings span, and the length of the main body chords on the external wings outboard ends being adjusted to generate low induced drag and simultaneously provide for a sufficient contribution of said main body external wings in sustaining longitudinal stability of said large subsonic aircraft, said main body trailing edge is arching substantially in aft direction from said external wings inboard ends to said plane of symmetry, thus a trailing edge sweepforward is being formed, the trailing edge sweepforward maximum angle exceeding 40 degrees in the area of said main body transition sections, hence resulting in very long said main body chords in the area of said main body central section, thereby providing for formation of inner space for a bulky payload accommodation by using thin main body airfoils, whereby said main body with smooth aerodynamic surfaces, thin airfoils, large airlifting surface area, and low induced drag generation providing for a high lift capacity and high aerodynamic efficiency of said large subsonic aircraft at high subsonic speed,

b) a central jet engine pylon with at least one jet engine being situated therein, said jet engine pylon being disposed on the rear portion of said main body over the main body upper surface so that said plane of symmetry is simultaneously the central jet engine pylon symmetry plane, the central jet engine pylon airframe being directly integrated with the main body airframe, the front portion of said central jet engine pylon having an aerodynamically shaped lip, the central jet engine pylon lip with said main body upper surface constitute a central jet engine air inlet, thus significantly reducing the thickness of boundary layer over said main body upper surface in front of said central jet engine air inlet, whereby additionally increasing aerodynamic efficiency of said large subsonic aircraft,

c) a fin with rudder being joined said central jet engine pylon on the top thereof so that said plane of symmetry being simultaneously the fin symmetry plane, said fin with rudder being at a great distance from the gravity center of said large subsonic aircraft, whereby significantly increasing yaw control and directional stability of said large subsonic aircraft,

d) a tailplane with elevators extending along said transverse axis on both sides of said plane of symmetry, said tailplane with elevators being joined said fin, the tailplane vertical position being adjusted to avoid turbulent airflow aft of said main body, the longitudinal position and surface area of said tailplane with elevators being adjusted to provide for sufficient pitch maneuver and longitudinal stability of said large subsonic aircraft that meet stability requirements for a civil aircraft,

e) two symmetrical lateral jet engine pylons being placed over said main body upper surface in the area where said main body trailing edge is having high sweepforward angles, said lateral jet engine pylons overlapping said main body trailing edge, thereby reducing vortex airflow around said main body trailing edge, the lateral jet engine pylons airframe being directly integrated with the main body airframe, the lateral jet engine pylon front portion having an

aerodynamically shaped lip, the lateral jet engine pylon lip with said main body upper surface constitute a lateral jet engine air inlet, thus significantly reducing thickness of boundary layer over said main body upper surface in front of said lateral jet engine air inlets, whereby additionally increasing aerodynamic efficiency of said large subsonic aircraft.

3. A large subsonic aircraft having a plane of symmetry and a transverse axis, said transverse axis being perpendicular to said plane of symmetry, said plane of symmetry including a longitudinal and a vertical axis, said longitudinal axis being perpendicular to said vertical axis, said longitudinal axis coinciding with the direction of airflow, said large subsonic aircraft comprising:

    a) a main body extending along said transverse axis, said main body being composed of a central section, two symmetrical transition sections and two symmetrical external wings, the main body central section, the transition sections, and the external wings being blended into a unique airlifting body with smooth aerodynamic surfaces, said main body having an upper and an under surface, a leading and a trailing edge, the main body cross sections having airfoil shapes in airflow direction, the main body airfoils having chords that extend between the main body leading and trailing edge, said main body leading edge having a sweepback, said main body trailing edge in the area of said main body external wings having a sweepback, the trailing edge sweepback angle on the external wings inboard ends being zero, the leading edge sweepback angles, the trailing edge sweepback angles, the external wings span, and the length of the main body chords on the external wings outboard ends being adjusted to generate low induced drag and simultaneously provide for a sufficient contribution of said main body external wings in sustaining longitudinal stability of said large subsonic aircraft, said main body trailing edge is arching substantially in aft direction from said external wings inboard ends to said plane of symmetry, thus a trailing edge sweepforward is being formed, the trailing edge sweepforward maximum angle exceeding 40 degrees in the area of said main body transition sections, hence

resulting in very long said main body chords in the area of said main body central section, thereby providing for formation of inner space for a bulky payload accommodation by using thin main body airfoils, whereby said main body with smooth aerodynamic surfaces, thin airfoils, large airlifting surface area, and low induced drag generation providing for a high lift capacity and high aerodynamic efficiency of said large subsonic aircraft at high subsonic speed,

b) two symmetrical lateral jet engine pylons being placed over said main body upper surface in the area where said main body trailing edge is having high sweepforward angles, said lateral jet engine pylons overlapping said main body trailing edge, the lateral jet engine pylon front portion having an aerodynamically shaped lip, the lateral jet engine pylon lip with said main body upper surface constitute a lateral jet engine air inlet, thus significantly reducing thickness of boundary layer over said main body upper surface in front of said lateral jet engine air inlets, whereby additionally increasing aerodynamic efficiency of said large subsonic aircraft,

c) two symmetrical tailplane halves with elevators, each tailplane half being joined said lateral jet engine pylon on its outboard side, the tailplane half extending along said transverse axis and having a leading edge strake, said leading edge strake being joined said lateral jet engine lip, thereby preventing vortex airflow around said lateral jet engine pylons, said tailplane half having a dihedral, the tailplane half dihedral being adjusted to avoid turbulent airflow aft of said main body, the longitudinal position and surface area of said tailplane halves with elevators being adjusted to provide for sufficient pitch maneuver of said large subsonic aircraft and meet longitudinal stability requirements for a civil aircraft.